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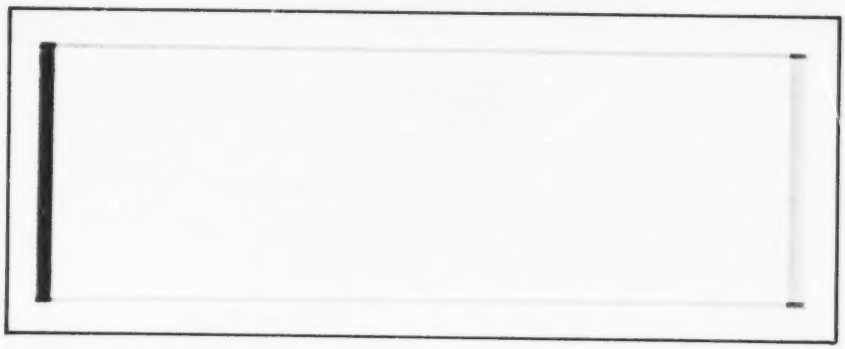

WORKING PAPER

Marketing and Economics Branch

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Working papers are (1) interim reports completed by the staff of the Marketing & Economics Branch, and (2) research reports completed under contract. The former reports have received limited review, and are circulated for discussion and comment. Views expressed in these papers are those of the author(s) and do not necessarily represent those of Agriculture Canada.

CANADIAN GREENHOUSE VEGETABLE INDUSTRY

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CANADIAN GREENHOUSE VEGETABLE INDUSTRY

Introduction

The Canadian greenhouse vegetable sector starts to market cucumbers in late February (tomatoes in early March) and runs for about 22-25 weeks. More recently, the tomato season has been extended and encounters more competition from domestic field product which starts in mid-July.

At least five recent reports have been prepared by department and private consultant groups (Appendix I). Specific reports, some of which were internal, on energy use, individual provincial demand and production assessments have been prepared. Most recently, a national report on both the demand for greenhouse vegetables and an economic assessment of the Canadian greenhouse vegetable industry was produced.

These reports covered a wide range of issues but in general include the following:

A. Demand for the products.
B. Market prices and forecasts.
C. Production costs - both fixed and variable
D. Energy - cost, use of waste heat
E. Competition - Mexican and U.S. field products
F. Capital - replacement and condition
G. Government Market Assistance - all sources for all purposes
H. Transportation - impact on profitability
I. Alternative Crops and Cropping Pattern for Canadian Greenhouse Producers
J. Tariffs and Exchange Rate
K. Profitability of the Sector
L. Product Quality and Identification
M. Efficiency of the Marketing System

These are the issues that are usually raised when the future of the sector is discussed. Findings for each of the issues will be identified here with reference to specific reports for readers wishing to verify or expand upon the material presented. Based on the results of the various studies each issue will be classified in terms of its likely impact upon the overall profitability of the sector. Some additional data are provided in tables at the end of the report.

Assessment of Issues

A. Demand for the Products

Greenhouse tomatoes and cucumbers were the two products considered in depth. Two approaches were taken. One resulted in a consumer and trade assessment of greenhouse products versus field products. The second approach involved a linear projection of current consumption patterns and a projection of recent trends. Results from the two studies arrived at basically the same conclusion that the future demand for Canadian greenhouse tomatoes appears modest (17% by year 2000) while that for greenhouse cucumbers is somewhat more promising.

The firm of Thorne, Stevenson and Kellogg, using consumer focus groups and subjective trade interviews, determined that there are serious identification and perception problems with respect to greenhouse tomatoes. Although the focus group and interview sessions occurred during the fall when local greenhouse tomatoes are very limited in supply, the results indicated that consumers do not identify high quality greenhouse tomatoes with their idea of top quality tomatoes which are domestic field tomatoes. In fact, many people interviewed indicated that tomatoes available when domestic field product is not available are greenhouse products and of lower quality. Some focus group participants realized that many off season tomatoes were imported field tomatoes but inter-

preted their quality as representing that of the greenhouse product. Members of the purchasing trade that purchase Canadian products had a range of responses. It was clear from some responses that the individuals involved were not regular purchasers of greenhouse tomatoes. These individuals were unhappy with quality standards, lack of consistent supply and the somewhat unbusinesslike approach of some producers. A number of industry people related that these characteristics were not usually true for greenhouse tomato producers because the supply and quality is usually consistent within the season and sales made on a very businesslike manner. However, the important factor from this assessment of the demand for greenhouse tomatoes is that there is no large unsatisfied demand for the product. Any expansion of demand will require an extensive promotion program with a high quality product. A public relations program to identify the quality product will be necessary. This same study found a more positive result for greenhouse cucumbers where an increase in demand can be expected.

A study by Arcus Consulting Limited and Inmarint used current consumption levels and trends to project the demand for tomatoes and cucumbers.[1] For tomatoes, they found a "modest potential". "The trend in per capita consumption of tomatoes in Canada is

essentially flat" according to study results. Increased consumption as a result of population growth is the only area of expansion for tomatoes. For cucumbers, however, this same assessment determined that the market expansion could be substantial over the medium and longer term. For cucumbers, the per capita consumption

[1]Greenhouse and field tomatoes and cucumbers were included in the analysis because they compete with each other and together represent the total potential market.

trend was found to be very positive. This finding is dampened somewhat when consideration is given to the fact that the "seedless" cucumber has been introduced during the past ten years. Prior to the introduction of this type of cucumber per capita consumption was declining. Thus the growth reported may be partly explained by a return to former consumption levels and an initial response to a new product. Consequently, the outlook for cucumber consumption, while more optimistic than for tomatoes, should not be overstated.

Changes in demand as a result of quality differences are extremely difficult to determine but could have a positive impact. Import replacement is likely to be highly correlated to price.

Another finding by the Thorne, Stevenson and Kellogg study was that salad bar operators are using alternatives to tomatoes and cucumbers or have experienced a reduction in the volume of these two products selected by consumers. As each item is free choice, it would appear that consumers are expressing a taste response and not a price response. In restaurants, a trend away from tomatoes and cucumbers as a side garnish was revealed in some situations. There is also the possibility that salad bar operators have been motivated in this direction by lower input and labor costs.

In general, the greenhouse vegetable sector does not have an untapped, readily available market for additional production. Any increase will be measured and require that the products be competitive in terms of price and quality. Demand in terms of current product attractiveness will not determine the sales level in future years.

B. Market Prices and Forecasts

Prices for both commodities for the period 1975-82 were found by the Arcus and Inmarint study to have fluctuated. Prices for both greenhouse vegetables are set by a marketing board for a large percentage of the crop. The price is established on the basis of inventory and the price of imported field product. A greater degree of consistency was found in the tomato price which with two exceptions showed a gradual increase over the period. A projection of this trend suggests a revenue in the year 2000 which will not cover total costs[2]. For cucumbers, however, the price fluctuates on a regular basis and the forecast is much less positive. As with tomatoes, the estimated price for the year 2000 does not cover total costs[3].

The degree of reliability that can be placed on price forecasts from the historical pattern for greenhouse vegetables is very limited. Prices for both vegetables are extremely sensitive to competition from imports of field product. Both products are also sensitive to changes in economic conditions. A decline in the economy will bring about a decrease in demand and thus a decrease in prices.

Long english cucumbers have not always covered their production costs because of low prices for the field product. While not a direct substitute, the field product is a market factor once the

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[2]Table 8:1, Page 63, A Report on medium and long term markets for Canadian Greenhouse vegetables (Arcus - Inmarint Study)

[3]Table 9:1, Page 73, (Arcus - Inmarint Study)

market price differential for the two items reaches a certain level. While both greenhouse cucumbers and tomatoes command a premium price, when the field product is very abundant the price for both products declines.

C. Production Costs - Fixed and Variable

Detailed information on both fixed and variable costs have been provided in the Arcus-Inmarint study. As with many agriculture commodities, the costs per unit of product are not always covered by revenue. Variable costs are usually covered but fixed costs are not. While a situation where total costs are not covered by revenue over the long run would seem to be impossible, consideration must be given to how costs are determined. By and large, variable costs can be measured and charged as they occur. Efficient producers will use fewer inputs per unit of production, have higher yields and purchase inputs at as an attractive a price as possible. Fixed costs, while in accounting terms refer to specific expenditures, are sometimes assumed to be related to only the amount of capital invested, the estimated present value of assets, anticipated return to resources from other activities and anticipated returns to management. Some of the factors used to determine fixed costs are very subjective and not supportable by documentation. In some situations, the return from the alternative use of assets is very low. Often capital assets cannot be converted to alternative uses. While greenhouse vegetable facilities can be used for flower production, there are very limited alternative uses for the capital equipment.

For both tomatoes and cucumbers, total costs often exceeded revenue. However, a close review of costs suggest that many producers are covering variable costs on a regular basis and receiving some revenue against fixed costs. These operations are also incurring net profits in some years when all costs are more

than covered. Remaining in the industry provides an efficient operator with the chance of realizing net profits on a regular basis. A serious financial situation arises when revenue does not cover variable costs. When returns decline rapidly the Federal Government stabilization program is of assistance but after several years of low returns the stabilization program would be of marginal assistance. In summary, a total cost which occasionally exceeds total revenue does not indicate that the sector is inefficient or about to be shut down.

D. Energy, Cost, Use of Waste Heat

Once energy costs began to escalate in the 1970's the greenhouse vegetable sector experienced a significant readjustment in terms of the importance and impact of various inputs. Over the period, 1978 to 1982 fuel costs as a percent of total variable costs increased from 27 to 37 percent (table 7.1 Arcus and Immarint, page 58). This degree of importance was further supported in a statistical comparison showing fuel costs in 1981 as representing 32.96 percent of the value of average sales (special statistics Canada data run). Although a number of fuel saving technologies have been introduced and various other day to day efficiencies pursued, there is a limited amount of discretion in the hands of the producer concerning this input. As a result, even the most efficient producers have been faced with steadily increasing variable costs over time.

One alternative to the use of high cost fossil fuels has been the idea of alternative heat sources. In some situations, alternative heat sources include heat generated from oil pumping stations or nuclear facilities. To date, these have not had a significant impact on the sector as problems of transportation, less light, cold conditions and capital costs have not been overcome. And certainly the major production areas have not made significant shifts to alternative sources of heat.

Major greenhouse vegetable producers, e.g., in Leamington, Ontario have very limited alternative heat sources and are not able to move their facilities to new sites. Existing social structures also limit any move to waste heat source areas by current greenhouse vegetable growers. Any facilities making use of alternative heat sources will be new and not as a result of a relocation of existing facilities.

In summary, energy is a critical factor for the existing greenhouse vegetable sector. Despite a number of requests, special tax rates for energy used by the greenhouse sector will not be considered. In addition there are very limited alternatives available for improved energy efficiency at this time. As real energy prices rise, producers will come under increased economic pressure unless product prices increase. Given the limited improvement in prices expected over the period from now until the year 2000, there will definitely be some adjustments in the sector.

E. Competition - Mexican and U.S. field products

Because seedless cucumbers must be grown in controlled situations where no insects are allowed, imports have been a limited problem to date. There are, however, some seedless cucumber imports from parts of the U.S. and Spain but these are not substantial at this time.

Tomato imports, especially field grown "represent a substantial threat"[4] to the Canadian greenhosue sector. While Holland,

[4]Arcus and Inmarint study, sector on competition, chapter 8.

Spain and occasionally one or two other countries export greenhouse tomatoes to Canada, the volume is limited and prices usually very high. Field tomato competition from the U.S. and Mexico, however, is expected to increase.

Competition from the U.S. and especially Mexico will continue as indicated by the Arcus and Inmarint study. A major irrigation program in Mexico combined with an existing low cost of production for tomatoes will result in a significant acreage increase in Mexico. As a result, imports of field product are expected to increase at an annual rate of 2 to 3 percent. As will be mentioned below, transportation is not considered to be as significant a factor as previously believed in making imported field product more competitive. Thus, the imported field product will remain as a serious issue.

Domestic field production during July, August and early September remained fairly constant over the period 1971 to 1981. However, in 1982 and apparently in 1983 production escalated (Arcus and Inmarint). While most of the recorded increase in domestic production is destined for the tomato paste sector of the industry some additional sales on the fresh market have been observed. This increase presents additional competition to those greenhouse tomato producers trying to extend the season into the fall.

In summary, competition from imported field and greenhouse tomatoes as well as domestic field tomatoes at the beginning of their production season will continue as a major impediment to the sector obtaining increased prices. Cucumber competition will not be nearly as aggressive. The tomato sector must survive on the existing specific price difference between their product and that of competing products as there is little likelihood of an increased price margin.

F. Capital - Replacement and Condition

A review of the age of greenhouse facilities by Arcus and Immarint demonstrates that Ontario's greenhouse area under glass for tomato production has 44 percent over 20 years old. Only 24 percent are less than 10 years old. When both plastic and glass were considered 59 percent were over 20 years old while less than 8 percent was under 10 years old. For cucumbers the situation was as follows; 27 percent over 20 years with the rest spread over the four ranges from less than 5 years to 15 to 20 years. Quebec's situation differs significantly from that of Ontario's with 50 percent of the tomato growers reporting an age range of 5 to 10 years, 35 percent between 10 and 15 and only 13 percent between 15 and 20 years. Cucumber producers in Quebec had a similar pattern. Alberta has a pattern similar to that of Ontario while B.C. has 54 percent of the sector in the 5 to 15 year range but with 38 percent older than 20 years. Quebec's divergent situation may be explained by that province's recent programs to initiate self-sufficiency in fruits and vegetables. In general, the sector's capital in terms of buildings has been declining. In view of the recent returns to the sector it is not surprising that the capital assets have not been renewed on a regular basis. Some new assets do indicate, however, that some money is entering the sector and that a degree of profitability exists. On a longer-term basis, a number of facilities may not remain in the sector especially in the Leamington area of Ontario.

In terms of conditions it is assumed that most facilities have been well maintained as growers try to reduce energy costs and remain efficient. Some of the structures have not been renovated nor replaced because of a limited return from the business. When the older facilities reach a point where they must be replaced, it is speculated that a number of operators may leave the sector. Historically, families were larger and someone took over the

operation when the parents retired. More recently with smaller families and a move by many young people away from Agriculture, the likelihood of a family member taking over the operation appears to have diminished. While the absence of a family member to take over a greenhouse operation may mean the demise of that operation, the possibility of non-family members entering the industry suggests greater flexibility in terms of moving the industry to a new location. New participants may not be confined by existing structures and family relationships to one area such as Leamington, Ontario. If there are waste heat opportunities, it will be new entrants that take advantage of them.

G. Government Market Assistance

Significant assistance has been directed to the greenhouse vegetable sector. A number of federal government departments as well as each provincial government provides aid to the sector. During 1980-81 the federal government contributed 2.5 million dollars. The year 1980-81 was slightly higher than average because of a stabilization program. The bulk of the Federal government funding comes in the form of research programs. Provincially a high of $1.38 million was contributed to the sector in 1981-82. This was dominated by a $998,000 contribution by Quebec for non-conventional fuel usage in greenhouse heating. Significant financial assistance by the province of Quebec since 1980 accounts for some of the recent developments of the sector in that province (mentioned above).

Ontario has a five year, five million dollar assistance program for the introduction of energy saving technology into greenhouse facilities. It provides qualifying growers with one-third of the capital cost to a cumulative maximum of $4.25 per square metre of

existing greenhouse and a maximum of $17,000 per enterprise. A Federal import surtax system is also available for the sector. This prevents extreme price declines as a result of very low priced imports and has been used in the past.

While stabilization payments have been identified as chronic and of concern, the sector received payments in only five of the years between 1972-73 and 1982-83 (included 4 cucumbers and 2 tomato programs). This compares with 5 payments for potatoes over the same period. In terms of the amount of money involved for each program, the amounts were in 1976 $276,000 for cucumbers and$ 437,000 for tomatoes, $785,000 in 1979 for cucumbers, $616,000 in 1980 for cucumbers. In 1981, $371,000 for cucumbers and $456,000 for tomatoes and possibly $4,166,000 for the most recent cucumber program which is currently in process. As for potatoes, total payments of $60,686,000 have been made.

Some of the concern arising from a number of stabilization payments to the sector has been the rising cost of energy and the dominance of that factor in the cost of production for greenhouse vegetables. Analysts are concerned that the incidence of stabilization requests is a direct result of increased energy costs. While energy costs are clearly a factor, a review of market conditions in those years when a program was necessary indicate that energy costs alone were not the major issue. A significant drop in price has been a key factor. As with other crops, this situation is usually beyond the control of producers and thus justifies a program according to the Agricultural Stabilization Act.

In summary, the sector has received considerable financial aid but not an amount that is out of line with respect to other commodities. As an instrument of financial assistance, the stabilization program has been used as frequently for greenhouse vegetables as for potatoes.

H. Transportation

When energy costs escalated rapidly,a number of analysts predicted that increased import transportation costs would improve the competitiveness of the sector. A close review of the impact of increased energy costs on the transportation factor versus the impact of higher energy costs on the production factor has clearly shown that transportation costs will not be an issue. With energy dominating the production side and only a minor factor in the cost of imports (energy represents only 13.4% of the transportation cost),[5] the anticipated benefit will not materialize. Transportation will remain an issue in terms of availability, freshness and convenience. In fact, deregulation of transportation rates in parts of the United States may offset any price increases related to energy for the immediate future. One comparison of transportation costs from Florida to Toronto versus Leamington to Toronto indicated very similar costs.[6]

I. Alternative Crops and Cropping Pattern for Canadian Greenhouse Producers

A number of possibilities have been identified to replace cucumbers and tomatoes. Lettuce is the most prevalent with a number of greenhouse or controlled atmosphere units producing the crop at present.

Other crops produced to a much smaller degree include green, red and yellow peppers, spinach and several vine type products. With the exception of red and yellow peppers and lettuce none are

[5]Inmarint International Marketing and Investment Ltd., April, 1983, page 88.
[6]Ibid page 83.

significant. The most overriding problem seems to be competition from field grown product. For the alternative crops, including lettuce, the difference in quality has been difficult to identify. Consequently the possibility of a significant price margin between imported field and greenhouse product to cover the extra costs of greenhouse production is limited. There are also some production problems for some of the alternatives. In a number of situations, the greenhouse facilities can be used to start a crop early in the year but not in the very cold winter months.

Another alternative is flower production. Flowers may be produced as part of the total annual greenhouse crop. They might also be grown when tomatoes or cucumbers were not in production. This intercropping would mean more intensive use of capital facilities as well as fuller use of labor and management resources. Some growers have already shifted to full flower production. In terms of cropping periods, consideration might be given to producing tomatoes and cucumbers for the peak price periods only.

In summary, as a distinctive profitable alternative to cucumbers and tomatoes there are no obvious vegetable crops available and perhaps only limited opportunities in floral production.

J. Tariffs and Exchange Rate

Tariff protection for cucumbers and tomatoes is not a factor nor is it likely to become one. The current exchange rate of more than 20 percent which favours Canada clearly assists the entire sector. If the two currencies become equal, the price of imports will decline rapidly and bring about more pressure in Canada.

K. Profitability of the Sector

A projection of costs and prices to the year 2000 suggest no profits for the sector (Arcus and Inmarint report). An optimistic cucumber demand would bring about the best possibility of profits. Considering that the optimistic forecast for cucumbers has limited likelihood of occurring, the overall outlook for the sector is limited in terms of net profits. For specific producers, profits will continue (Arcus and Inmarint report). Part of the sector, if conditions evolve along the current path, will leave as capital assets deteriorate.

L. Product Quality and Identification

A number of greenhouse vegetable producers in Northern Europe have established a profitable market based on consistent quality and product identification. The result has been a premium price in peak price periods when imported field product varies in quality and reliability of supply. This type of action requires strict industry discipline and control. Industry must establish and control the operation themselves. Various firms have had some success by doing this but a larger effort by the sector is necessary to ensure a solid reputation for the industry as a whole.

M. Efficiency of the Marketing System

A major component of the sector, located in the Leamington area of Ontario, market through a central system. While several packing facilities are utilized, one selling outlet is used. This maintains a constant price and efficient transportation. This one operation is a price "taker" however, as imported field product dictates prices. In other regions, many sales are direct to retail outlets. With direct store purchasing likely to decrease, a number of growers will be forced into marketing as an

industry[7]. In terms of transportation, trucks returning to Leamington are often empty and this raises marketing costs. Generally the marketing has been quite efficient on an industry basis.

Evaluation of the Sector Under Existing and Expected Conditions

While the greenhouse vegetable sector in general is under stress, the sector will continue to exist and evolve as a result of a number of market factors. Some parts of the sector are very efficient and will continue as viable entities.

A number of external factors such as energy prices, interest rates, exchange rates, competition and trends in the marketing sector will affect the sector. With energy accounting for approximately 37 percent of total variable costs, an annual energy price increase of 5 percent will raise variable costs by approximately 1.85 percent per year. This will bring pressure on the less efficient producers as prices are not expected to escalate rapidly as indicated by the Arcus-Inmarint study.

Any escalation of interest rates will have a negative impact on consumer demand as well as on the cost of borrowing for capital purposes. On the consumer side, prices for top quality produce may be under pressure if consumers are willing to accept lower quality product at lower prices. This economic factor strengthens the observation that price increases will be limited in the foreseeable future.

Exchange rates will affect competition especially with respect to such countries as Spain and Mexico. While the Canadian dollar has declined slightly with respect to the U.S. dollar, the overall change has been

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[7]Thorne, Stevenson & Kellogg, page 4.

one of appreciation with respect to most other currencies. This means imports will be less expensive and again lower the price premium available to greenhouse vegetable growers in Canada.
Competition from imported field products will continue as will imported plastic house product from Spain. Local field product during late July and August will also be a limiting factor with respect to sales volume and prices during the late summer and early fall. This competition will mean that prices will be limited on the up side and make the price forecasts in the Arcus and Inmarint study very probable.

Another factor that will have some impact is a change in trends in the marketing system. A change in trends may include the vegetables used by salad bars, method of buying, frequency of orders and deliveries, firms doing the purchasing and specifications for product.

All of the external factors appear to imply some limitation to the sector and an exit from the sector by a number of inefficient firms. Consequently, some consolidation of the sector is anticipated.

Internally, a number of factors such as product quality, production efficiency, individual firm profitability, specific firm resources and the availability of local markets for alternative greenhouse crops are all factors. A producer that excels in all of these clearly has a profitable operation as implied by the Arcus and Inmarint study. While pooling disguises the added profitability from above average product quality, the additional return from higher yields is obvious. Arcus and Inmarint found that more efficient producers had tomato yields that were up to 40 percent higher than average while cucumber yields were up to 69 percent above the average.[8] This yield disparity clearly explains why a segment of the industry is profitable

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8Page 80-81 Arcus and Inmarint Study.

and did not likely require stabilization assistance in recent years. It may be possible in future years to use an industry average from the top half of the sector in calculating costs for stabilization programs.

Individual firms were found (Arcus and Inmarint) to have significantly lower production costs as a result of providing more repair and service work themselves. This resulted in greater use of management and existing labor which thus increased pre-tax profits. Many of these same firms were also found to have self-constructed or self-maintained capital facilities. Again this approach puts a number of firms into a profitable situation and very capable of competing.

While alternative greenhouse crops are often mentioned as a possible source of additional returns, there has been very limited success with existing alternatives. As already mentioned in the sector on factors affecting the industry, flowers appear to offer some possibility. Some rotational cropping may be possible but again the limitations appear to be significant. It is not known whether alternative cropping would assist significantly. The fact that the idea is not new and that very few do it suggests some limitations.

Summary

In summary, a continuation of the sector under present conditions would result in some producers leaving the sector very shortly. This may not be serious as these are likely to be mostly inefficient, high cost units with little or no industry capability. While not possible to demonstrate, it is believed that most quality problems arise in the lower income group. If some units leave the sector would have a larger average size with more uniform quality, plus a component that will be new to the sector where waste heat facilities are useable.

With respect to the various factors affecting the sector, the results suggest limited growth and a price-cost squeeze. Energy will remain as a major factor in production while competition from imported field products will continue as a major factor. Considerable financial assistance has been directed to the sector although parts of the capital structure remain antiquated.

Very often transportation is identified as being a factor that will make imports more expensive. Such will not be the case as transportation is a small factor in imported costs. Alternative crops have very limited possibilities. Currently the exchange rate greatly assists the sector. In terms of profitability, a segment does appear to be quite profitable.

GREENHOUSE VEGETABLE PRODUCTION BASIC DATA

Basic Data	1981	1982
No. of Growers[1]		
Vegetables only	292	336
Vegetables with or without other	474	552
No. of Employees		
Vegetables only	N/A	1 186
Vegetables with or without other	N/A	1 948
Value (FARM) of Sales		
Vegetables only ($000)	21 322	23 229
Vegetables with or without others ($000)	35 701	38 796
Value of Grower Purchases		
Vegetables only ($000)	N/A	19 704
Vegetables with or without other ($000)	N/A	32 909
Area of Production		
Vegetables only (hectares)	110.71	104.57
Investment		
Vegetables only per sq/metre/$'s)	60.13	60.14
All items ($000)	66 567	62 887
Farm Price[2]		
Cucumbers ¢/kg	92.0	90.4
Tomatoes ¢/kg	132.2	148.3

[1]The 1982 survey by Statistics Canada included more small producers than ever before. The fact that total investment of the 292 producers in 1981 slightly exceeded that of the 336 in 1982, indicatges that the largest producers were included in 1981.
[2]Excludes agricultural stabilization payments.

Sources: Statistics Canada # 22-202.

TABLE 1. CANADIAN GREENHOUSE CUCUMBERS: PRODUCTION, IMPORTS, FARM VALUE, FARM PRICE - 1960-1983

Year	Production[1]	Imports[2]	Farm Value	Farm Price
	- metric tonnes -		- $000 -	- ¢/kg -
1960	6 929	12 762	2 070	29.9
1961	7 677	14 080	2 054	26.8
1962	8 062	13 047	2 251	27.9
1963	11 704	13 611	3 138	26.8
1964	14 941	13 126	3 565	23.9
1965	12 732	16 810	3 951	31.0
1966	12 721	20 457	3 895	30.6
1967	11 426	16 160	3 525	30.9
1968	11 398	11 498	4 047	35.5
1969	9 168	16 642	3 069	33.5
1970	6 792	17 627	2 883	42.4
1971	7 697	16 092	3 447	44.8
1972	7 855	19 398	3 598	45.8
1973	8 603	20 062	4 228	49.1
1974	8 431	22 724	4 867	57.7
1975	8 777	23 789	5 975	68.1
1976	10 819	32 263	7 322[3]	67.7
1977	11 819	30 579	8 314	70.3
1978	11 122	31 579	9 230	83.0
1979	15 018	32 516	12 455[3]	82.9
1980	15 298	34 272	13 455[3]	88.0
1981	16 602	36 439	15 645[3]	94.2
1982	17 223	33 907	15 574	90.4
1983		35 943		

[1]Data for 1975 to date are higher than previously published because seedless cucumbers, averaging 13 lbs. per dozen, have increasingly dominated production in the period from 1973 to 1982. The factor for 1960-1972 has been reduced from 10 to 9 lbs per dozen. The factors for converting dozens to tonnes were revised 9 March 1984 to equal the averages applicable to greenhouse cucumbers in Ontario district one, supplied by the Ontario Greenhouse Vegetable Marketing Board per Paul Muller, and are as follows in kilograms per dozen: Before 1973: 4.08 kg; 1973: 4.30; 1974: 4.49; 1975: 4.80; 1976: 5.04; 1977: 5.33; 1978: 5.51; 1979: 5.61; 1980: 5.71; 1981: 5.77; 1982: 5.87 and 1983 to date: 5.90.

[2]Imports include field and greenhouse.

[3]Includes A.S.B. subsidy whenever paid, namely, in 1976, 1979, 1980 and 1981.

Source: Statistics Canada 65-203 class 09155 & "Refer Handbook, Fruits" Dec. 1977 & Dec. 1980, also 22-202, 1981 to date.

TABLE 2. CANADIAN GREENHOUSE TOMATOES: PRODUCTION, IMPORTS, FARM VALUE, FARM PRICE - 1960-1983

Year	Production	Imports[1]	Farm Value	Farm Price
	- metric tonnes -		- $000 -	- ¢/kg -
1960	3 532	70 711	1 816	51.4
1961	4 834	73 825	2 176	45.0
1962	5 278	72 733	2 642	50.1
1963	7 553	76 723	3 543	47.0
1964	7 837	76 457	3 960	50.5
1965	8 590	77 423	4 408	51.3
1966	9 951	84 140	4 921	49.5
1967	9 371	87 463	5 415	57.8
1968	10 037	88 086	6 438	64.2
1969	10 192	96 995	6 906	67.8
1970	12 364	97 803	7 580	61.3
1971	12 499	87 222	8 429	67.4
1972	13 616	99 443	9 230	67.8
1973	12 981	109 834	10 037	77.3
1974	13 772	103 618	10 980	75.4
1975	14 118	105 862	14 726	104.3
1976	16 189	117 093	15 677[2]	96.8
1977	15 705	112 144	16 110	102.6
1978	15 870	122 314	18 353	115.7
1979	14 998	126 922	18 664	124.4
1980	14 813	136 515	19 064	128.7
1981	14 884	131 549	20 133[2]	135.3
1982	15 072	122 559	22 357	148.3
1983		142 847		

[1]Imports include field and greenhouse.
[2]Includes ASB subsidy whenever paid, namely, in 1976 and 1981.

Source: Statistics Canada 65-203, class 091-90 and "Refer. Handbook, Fruits", Dec. 1977 and Dec. 1980 also S.C. 22-202, 1981 to date.

TABLE 3. AGRICULTURAL STABILIZATION BOARD PAYMENTS FOR GREENHOUSE VEGETABLES AND OTHER FRUITS AND VEGETABLES: (1) PER PRODUCER (2) PER KG OF PRODUCT (3) PER DOLLAR OF PRODUCT VALUE, FOR THE CROPS OF 1974 to 1982[1]

Commodity	Year of Harvest	No. of Recipient Producers	SUBSIDY PAID				Farm Value Canada[3]
			Total	Average per Producer	Per kg of Product[2]	Per $ of Cdn. Farm Value	
			$000	- dollars -			$000
Potatoes	1974	3,461	13,762.18	3,976	.03529	.0997	137,992
	1976[e]	1,361	3,604.27	2,648	.02512	.0186	193,507
	1977	3,776	20,957.83	5,550	.02940	.1328	157,798
	1978	3,433	6,788.59	1,977	.00882	.0381	178,158
	1979	3,319	12,622.00	3,803	.01543	.0775	162,952
Greenhouse Cucumbers:	1976	258	275.51	1,068	.02778	.0391	7,046
	1979	305	784.74	2,573	.05348	.0672	11,670
	1980	282	615.89	2,184	.04203	.0480	12,840
	1981	270	371.28	1,375	.02426	.0243	15,273
	1982	270	4,166.00[c]	15,430[c]	.24191	.2675[c]	15,574
Greenhouse Tomatoes:	1976	313	437.11	1,397	.03527	.0287	15,240
	1981	243	455.84	1,876	.03500	.0232	19,678
Apples:	1976	3,037	12,830.44	4,225	.04231	.3056	41,978
	1977[d]	617	3,206.97	5,198	.04299	.3931	8,158
	1980	3,539	17,338.85	4,899	.03902	.2040	84,977
	1982	3,533	20,338.00[c]	5,757[c]	.04630	.2363[c]	86,083
Cherries:	1975[b]	2,462	674.77	255	.06381	.1303	5,179
	1976[b]	1,324	1,321.22	998	.20503	.4667	2,831
	1977[b]	1,371	440.41	321	.06173	.0855	5,149
	1980[a]	630	969.11	1,538	.10251	.1743	5,561
	1982[a]	550	1,873.47	3,406	.28285	.4904	3,820

[1]No subsidy payments apply to the years of harvest, for these crops, omitted from the table.
[2]Cucumbers converted from dozens as follows: 1976: 5.04 kg/doz.; 1979: 5.61 kg/doz.; 1980: 5.71 kg/doz.; 1981: 5.77 kg/doz.; 1982: 5.87 kg/doz.
[3]Excluding subsidy. Data for 1977 apples apply to Quebec.
[a]Sour cherries
[b]Sweet cherries
[c]Approximate
[d]Quebec only
[e]Includes the supplementary program for B.C. "late" potatoes.

APPENDIX I

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